

Nalco Docket No.: 7726-NES

Customer No. 000049459

**REMARKS**

This is in reply to the Office Action mailed on June 11, 2007 ("Office Action").

Claims 1-25 and 29-32 are currently pending.

Claims 1, 2, 4-8, 12-17, 19 and 20 are rejected under 35 U.S.C. § 102(e) over U.S. Patent 6,569,983 ("Treybig").

Claims 1, 3, 9, 10 and 11 are rejected under 35 U.S.C. § 102(b) over U.S. Patent 4,396,499 ("McCoy").

Claims 21, 22 and 25 are rejected under 35 U.S.C. § 103(a) over U.S. Patent 6,569,983 ("Treybig") in view of U.S. Published Patent Application No. 2003/0008781 ("Gupta").

Claims 29-31 are rejected under 35 U.S.C. 103(a) over U.S. Patent 6,569,983 ("Treybig") in view of U.S. Patent 4,417,048 ("Soula").

Claims 23 and 24 are rejected under 35 U.S.C. 103(a) over U.S. Patent 6,569,983 ("Treybig") in view of U.S. Patent 5,779,405 ("Bruhnke").

Claim 18 is rejected under 35 U.S.C. § 103(a) over U.S. Patent 6,569,983 ("Treybig").

Claim 32 is rejected under 35 U.S.C. § 103(a) over U.S. Patent 6,569,983 ("Treybig") in view of U.S. Patent 4,417,048 ("Soula").

Claims 1, 17-20, 23, 29, 31 and 32 are amended to particularly point out and distinctly claim subject matter which Applicant regards as his invention.

Claims 9-11 are amended to maintain proper claim dependency.

Claims 2, 3, 8 and 12-15 are cancelled without prejudice to reduce the matters at issue.

No new matter is added by this amendment.

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### DISCUSSION

#### The Rejection of Claims 1, 2, 4-8, 12-17, 19 and 20 under 35 U.S.C. § 102(e) over U.S. Patent 6,569,983

Claims 1, 2, 4-8, 12-17, 19 and 20 are rejected under 35 U.S.C. § 102(e) over U.S. Patent 6,569,983 ("Treybig").

Applicant respectfully traverses this rejection.

Applicant has cancelled claims 2, 8 and 12-15, rendering the rejection of these claims moot and amended claims 1 and 17-20 to recite a polyhydroxyetheramine prepared by reacting a diepoxide with one or more alkylene oxide functionalized amines and one or more amines having two reactive hydrogen atoms wherein the diepoxide is selected from the group consisting of diglycidyl ethers of polyhydric phenols.

Applicant respectfully asserts that Treybig does not disclose a polyhydroxyetheramine which includes diglycidyl ethers of polyhydric phenols.

Accordingly, as Treybig discloses a different polymer than the polymer of this invention, Applicant respectfully requests withdrawal of the rejection under 35 U.S.C. § 102(e) over Treybig.

#### The Rejection of Claims 1, 3, 9, 10 and 11 under 35 U.S.C. § 102(b) over U.S. Patent 4,396,499

Claims 1, 3, 9, 10 and 11 are rejected under 35 U.S.C. § 102(b) over U.S. Patent 4,396,499 ("McCoy"). In reply to Applicant's arguments in the Amendment and Reply dated May 16, 2007 that McCoy does not disclose a method of modifying the permeability of a subterranean formation, the Examiner states:

... McCoy teaches demulsification of bitumen emulsions. Said emulsions may be under ground, or subterranean (Column 1 Line 22), where steam or hot water may be used to create the emulsion (Column 1 Line 26), and use of 1% of the polyhydroxyether amine in the composition is as previously set forth in the action dated 8/2/06. McCoy thusly teaches treated subterranean formations with aqueous compositions comprising 1% polyhydroxyetheramines.

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Applicant respectfully traverses this rejection.

Applicant respectfully asserts that while it may be true that bitumen emulsions may be formed underground by injection of steam and hot water into a subterranean formation, McCoy does not disclose injecting an aqueous composition comprising the claimed water-soluble alkylene oxide branched polyhydroxyetheramine into the formation.

Rather, Applicant respectfully asserts that McCoy discloses a method of treating an oil-in-water emulsion formed using the steam or hot water methods and *produced* from the subterranean formation. Applicant respectfully asserts that McCoy uses "produced" in its art-recognized sense as referring to the material which is recovered from the well. In this regard, see, for example, McCoy at col. 1, lines 21-25 "... the bitumen must be recovered by rendering the tar material mobile in situ and *producing* it through a well penetrating the tar sand deposit"; and col. 2, lines 54-65 "The *produced* bitumen emulsion may be treated by the process of our invention in a conventional manner, for example, in a conventional horizontal treater ...and mechanical or electrical means of demulsification" (emphasis added). Thus, Applicant respectfully asserts that McCoy discloses using the polymers disclosed therein in conventional emulsion breaking processes in which the composition is injected into the emulsion, not into the subterranean formation.

Further in this regard, the Examiner's attention is respectfully directed to the accompanying Declaration of Kin-Tai Chang which discusses conformance control and the fact that conformance control is different from, and not related to emulsion breaking.

Accordingly, as McCoy does not disclose injecting a polymer composition into a subterranean formation to modify the formations permeability, but rather teaches use of the composition disclosed therein in conventional demulsification of oil-in-water emulsions produced from the formation, Applicant respectfully requests withdrawal of the rejection of claims 1, 3, 10 and 11 under 35 U.S.C. § 102(e) over McCoy.

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The Rejection of Claims 21, 22 and 25 under 35 U.S.C. § 103(a) over U.S. Patent 6,569,983 in view of U.S. Published Patent Application No. 2003/0008781

Claims 21, 22 and 25 are rejected under 35 U.S.C. § 103(a) over U.S. Patent 6,569,983 ("Treybig") in view of U.S. Published Patent Application No. 2003/0008781 ("Gupta").

Applicant respectfully traverses this rejection.

Applicant has amended claim 1 to recite a water-soluble, branched polyhydroxyetheramine which includes diglycidyl ethers of polyhydric phenols. Applicant respectfully asserts that polyhydroxyetheramines incorporating diglycidyl ethers of polyhydric phenols are not disclosed by Treybig and further that nothing in Treybig teaches or suggests the equivalence of the claimed polymer incorporating diglycidyl ethers of polyhydric phenols with the polyhydroxyetheramines according to Treybig which solely incorporate aliphatic diepoxides.

As discussed in Applicant's Amendment and Reply dated May 16, 2007, Applicant further respectfully asserts that Gupta discloses a surfactant composition which is unrelated to both the claimed polyhydroxyetheramines incorporating diglycidyl ethers of polyhydric phenols and the polyhydroxyetheramines derived from aliphatic diepoxides of Treybig. Accordingly, Applicant respectfully asserts that there is nothing in Treybig or Gupta suggestive of their combination, and even if the references are combined, the claimed polyhydroxyetheramine is not taught or suggested by the resulting combination.

Finally, Applicant again respectfully asserts that it is settled law that when a process involves a novel material, patentability of the process is linked to the material. See Amendment and Reply dated May 16, 2007 and cases cited therein. Thus, while it may be true that addition of stabilization salts according to Gupta will increase or maintain the permeability of clay in a subterranean formation as asserted by the Examiner, Applicant respectfully asserts that this is irrelevant to the patentability of a process involving the claimed novel polyhydroxyetheramine in combination with the salts.

Accordingly, as the water-soluble, branched polyhydroxyetheramine including diglycidyl ethers of polyhydric phenols of this invention is novel and nonobvious over the polymer of Treybig and nothing in Gupta or Treybig teaches or suggests the equivalence of the surfactants according to Gupta and either the claimed water-soluble, branched polyhydroxyetheramines including diglycidyl

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ethers of polyhydric phenols and the polyhydroxyetheramines incorporating aliphatic diepoxides of Treybig, Applicant respectfully requests withdrawal of the rejection of claims 21, 22 and 25 under 35 U.S.C. § 103(a) over Treybig in view of Gupta.

The Rejection of Claims 29-31 under 35 U.S.C. 103(a) over U.S. Patent 6,569,983 in view of U.S. Patent 4,417,048

Claims 29-31 are rejected under 35 U.S.C. 103(a) over U.S. Patent 6,569,983 ("Treybig") in view of U.S. Patent 4,417,048 ("Soula"). In reply to Applicant's arguments in the Amendment and Reply dated May 16, 2007 the Examiner states:

Applicant argues that Soula does not disclose the formation of salts and as such the teachings of Soula are irrelevant to the above claims.

Examiner disagrees. Soula teaches the functional equivalence of methyl chloride and chlorooctane. The motivation is proper. Regarding the salt formation, the use of methyl chloride as an alkylating agent is disclosed by applicants in claim 23, last line, to form the salt of the polyhydroxyetheramine. Applicants arguments are thusly moot.

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Applicant respectfully traverses this rejection.

As discussed above, Applicant respectfully asserts that Treybig does not teach or suggest the claimed water-soluble, branched polyhydroxyetheramines including diglycidyl ethers of polyhydric phenols. Applicant further respectfully asserts that the recitation of methyl chloride as an alkylating agent in claim 23 does not moot Applicant's arguments with regard to Treybig, as alkylating agents according to Treybig are C<sub>5</sub>-C<sub>24</sub> alkyl or alkenyl (col. 3, lines 65-67), while alkylating agents according to the claimed invention are C<sub>1</sub>-C<sub>4</sub> alkyl (claim 23 and page 13, lines 26-27).

Applicant respectfully asserts that Soula discloses nothing more than the alkylation of amines having a reactive amino hydrogen with alkylating agents in the presence of base and a sequestering agent, see Abstract. Applicant respectfully asserts that the basic conditions described by Soula will not result in salt formation. Applicant further respectfully asserts that Soula teaches nothing regarding the equivalence of methyl chloride and chlorooctane apart from the fact that they can both

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be used to alkylate the amines disclosed therein. Soula certainly does not teach or suggest selecting methyl chloride, but not chlorooctane, and using it to form a quaternary ammonium salt of a water-soluble, branched polyhydroxyetheramine.

Therefore, Applicant respectfully asserts that any teaching in Soula regarding the purported equivalence of alkylating agents such as methyl chloride and chlorooctane is irrelevant to the patentability of claims 29-31 and further that even if the claimed alkylating agents are substituted for the alkylating agents according to Treybig the end product will be different given that the claimed water-soluble, branched polyhydroxyetheramines including diglycidyl ethers of polyhydric phenols are different from both the aliphatic polyhydroxyetheramines of Treybig and the simple organonitrogen compounds according to Soula. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 29-31 under 35 U.S.C. 103(a) over Treybig in view of Soula.

The Rejection of Claims 23 and 24 under 35 U.S.C. § 103(a) over U.S. Patent 6,569,983 ("Treybig")  
in view of U.S. Patent 5,779,405 ("Bruhnke")

Claims 23 and 24 are rejected under 35 U.S.C. § 103(a) over U.S. Patent 6,569,983 ("Treybig") in view of U.S. Patent 5,779,405 ("Bruhnke"). In reply to Applicant's arguments in the Amendment and Reply dated May 16, 2007, the Examiner states:

Applicant argues that Bruhnke discloses a fundamentally different polymer than Treybig and the references are thusly not combinable.

Examiner disagrees. Examiner previously expressed the need for Applicants to submit experimental results showing the materials of Treybig and Bruhnke are different since it is the Examiners position that the materials of Treybig and Bruhnke are similar if not identical materials. Examiner further requested unexpected results when using 0.005-2% of the solvent in the composition. Applicants state that they are at a loss as to how he can show any unexpected result. Examiner notes that data showing (1) a composition with no solvent versus (2) a composition with 0.005% solvent may be submitted so that unexpected results can be obtained.

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Applicant respectfully traverses this rejection.

As discussed above, Applicant respectfully asserts that the claimed water-soluble, branched polyhydroxyetheramines including diglycidyl ethers of polyhydric phenols are not taught or suggested by Treybig.

As discussed in Applicant's Amendment and Reply dated May 16, 2007, Applicant respectfully asserts that Bruhnke discloses a fundamentally different polymer than Treybig, as the colorants according to Bruhnke are not polymers and do not contain polyhydroxy groups but rather are monomeric amines resulting from reaction of Jeffamines and an alkylating compound. See col. 10, lines 17-64 and Examples. The monomeric amines according to Bruhnke do not possess any repeating units derived from diepoxy components which are capable of reacting with the Jeffamines to create a polymer. Applicant respectfully asserts that the difference between the claimed water-soluble, branched polyhydroxyetheramines including diglycidyl ethers of polyhydric phenols, the aliphatic polyhydroxyetheramines according to Treybig and the monomeric amines according to Bruhnke are readily apparent from the differing starting materials used to prepare the respective compositions. No experimental evidence should be required.

Finally, even if the teachings of Treybig and Bruhnke are combined and proper selection is made from the solvents and concentrations disclosed by Bruhnke, Applicant respectfully asserts that resulting composition would be different from the claimed invention as Treybig discloses a different base polymer.

Again, Applicant respectfully asserts that he cannot envision what would constitute an unexpected result with respect to the claimed composition given the differences between the claimed water-soluble, branched polyhydroxyetheramines including diglycidyl ethers of polyhydric phenols, the aliphatic polyhydroxyetheramines according to Treybig and the monomeric amines according to Bruhnke. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 23 and 24 under 35 U.S.C. § 103(a) over Treybig in view of Bruhnke.

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The Rejection of Claim 18 under 35 U.S.C. § 103(a) over U.S. Patent 6,569,983

Claim 18 is rejected under 35 U.S.C. § 103(a) over U.S. Patent 6,569,983 ("Treybig") for the reasons set forth in the Office Action dated Aug. 2, 2006.

Applicant respectfully traverses this rejection.

As discussed in detail above, Applicant respectfully asserts that Treybig discloses both a different base polymer, i.e. a water-soluble branched polyhydroxyetheramine including diglycidyl ethers of polyhydric phenols compared to aliphatic polyhydroxyetheramines and different alkylating agents, i.e. C<sub>1</sub>-C<sub>4</sub> alkyl halides compared to C<sub>5</sub>-C<sub>24</sub> alkyl or alkenyl halides.

Accordingly, as Treybig does not teach or suggest the claimed water-soluble alkylene oxide branched polyhydroxyetheramine or its salt, Applicant respectfully asserts that incorporating secondary amine, tertiary amine or ditertiary amine end groups into the polymer is likewise nonobvious. Applicant therefore respectfully requests withdrawal of the rejection of claim 18 under 35 U.S.C. § 103(a) over Treybig.

The Rejection of Claim 32 under 35 U.S.C. § 103(a) over U.S. Patent 6,569,983 in view of U.S. Patent 4,417,048

Claim 32 is rejected under 35 U.S.C. § 103(a) over U.S. Patent 6,569,983 ("Treybig") in view of U.S. Patent 4,417,048 ("Soula").

Applicant respectfully traverses this rejection.

As discussed above, Applicant respectfully asserts that the claimed water-soluble, branched polyhydroxyetheramines including diglycidyl ethers of polyhydric phenols and C<sub>1</sub>-C<sub>4</sub> alkyl halide and sulfonate alkylating agents are not taught or suggested by Treybig while Soula discloses the preparation of simple alkylamines under basic conditions rather than quaternary ammonium salts.

Applicant therefore respectfully asserts that as a polyhydroxyetheramine including diglycidyl ethers of polyhydric phenols and the formation of its quaternary salts is nonobvious over Treybig and Soula, incorporation of the recited amines and capping amines into the polymer is likewise nonobvious. Accordingly, Applicant respectfully requests withdrawal of the rejection of claim 32 under 35 U.S.C. § 103(a) over Treybig in view of Soula.

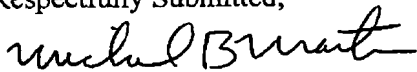
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**CONCLUSION**

In view of the foregoing amendment and remarks, Applicant respectfully requests withdrawal of the rejections under 35 U.S.C. §§ 102(e), 102(b) and 103(a) and respectfully asserts that this application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully Submitted,



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